July 30, 2018

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street S.W.
Washington, DC 20554

BY ELECTRONIC FILE

Re: Ligado Networks LLC
Written *ex parte* Submission
IB Dockets No. 11-109, 12-340

Dear Ms. Dortch:

Satelles Inc. ("Satelles") provides unique timing and location solutions delivered over the Iridium constellation of 66 low-earth-orbiting satellites. These timing and location signals are available anywhere on earth, without the need for local infrastructure, offering a solution that augments GPS and other location-based technologies. Unlike GPS, these signals can reach into many building structures. Most importantly, Satelles has customized the Iridium signal-in-space to provide a location-specific signature that can reliably prove (or authenticate) the location of a mobile device or other equipment, while being virtually impervious to spoofing and other attacks.

On May 16, 2018, I provided a presentation on the STL service and Satelles' partnership with Iridium at the National Space-Based PNT Advisory Board meeting in Baltimore, Maryland.[1] In addition to providing a detailed overview of the benefits of STL, I also noted that the "STL service depends on Iridium operating free from harmful interference" and noted the concerns that Iridium has raised in detailed technical analysis with the FCC on potential interference from Ligado's proposal to operate a mobile broadband service in spectrum adjacent to Iridium.

Given the concerns raised by multiple parties in this proceeding about the interference Ligado's proposed terrestrial operations may cause to Iridium,[2] in addition to Iridium's detailed

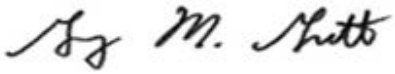
[1] Gregory Gutt, Chief Technical Officer & President, Satelles, CURRENT OPERATIONAL STATUS OF LOW EARTH ORBIT (LEO) SATELLITE-BASED TIME AND LOCATION, NATIONAL SPACE-BASED POSITIONING NAVIGATION AND TIMING ADVISORY BOARD 21ST MEETING, https://www.gps.gov/governance/advisory/meetings/2018-05/gutt.pdf (May 16, 2018)

[2] Letter from Telford E. Forgety, III, Director of Government Affairs & Regulatory Counsel, to Marlene H. Dortch, Secretary, FCC, IB Docket Nos. 12-340 & 11-109, at 1 (filed Dec. 6, 2017); Letter from Eleven Aviation Organizations to Daniel K. Elwell, Acting Administrator, Federal Aviation Administration, IB Docket Nos. 12-340, 11-109, at 1 (filed June 18, 2018); Letter from ASRI, A4A, HAI, and AIA, to Marlene H. Dortch, Secretary, FCC, IB Docket Nos. 11-109 and 12-340; RM-11681; IBFS File Nos. SES-MOD-20151231-00981, SAT-MOD-20151231-00090, SAT-MOD-20151231-00091, at 4 (filed June 20, 2017); Joint Aviation Reply Commenters, Reply Comments, IB Docket Nos. 11-109, 12-340, SAT-MOD-20151231-00090, SATMOD-20151231-00091, SES-MOD-20151231-00981, at 19 (filed Jun. 21, 2016).

technical studies, and the impact that harmful interference to Iridium could have on the STL service, Satelles submits the attached copy of its May 16 presentation for the Commission's consideration pursuant to Section 1.1206 of the Commission's rules.[3]

Please direct any questions concerning this submission to the undersigned

Sincerely,



/s/ Dr. Gregory Gutt
Chief Technical Officer and President
Satelles Inc.

Attachment

[3] 47 C.F.R. § 1.1206.

Current operational Status of LEO-Satellite-Based Time and Location

Satellite Time and Location – Continued Investment and Innovation

In June 2016 Satelles launched its Satellite Time and Location (STL) service.

Since then, with our partner (Iridium) we have made significant system upgrades to the service. Today we will highlight these innovations and showcase key capabilities of the system.

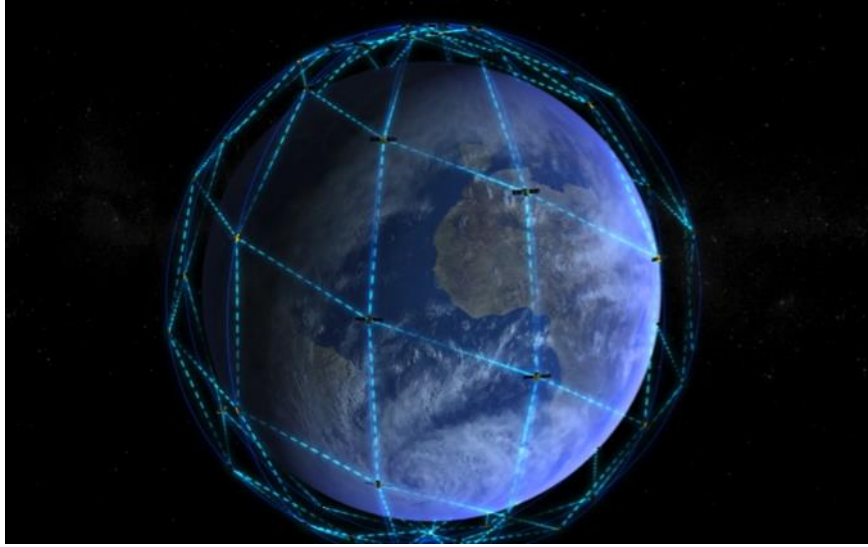
- Since 2016 there have been 5 successful launches of “Iridium NEXT” Satellites
- Today there are 50 new Iridium NEXT satellite vehicles in orbit and in use
- The fully replenished constellation will have 66 SVs and 9 in orbit spares
- Iridium also can “reconstitute” based on additional ground spares and has the ability to build and launch additional vehicles
- Total Private Investment for these upgrades is in excess of $3B
- No U.S. Federal funds were leveraged to support replenishment
- Satelles has continued to invest to enhance its PNT services

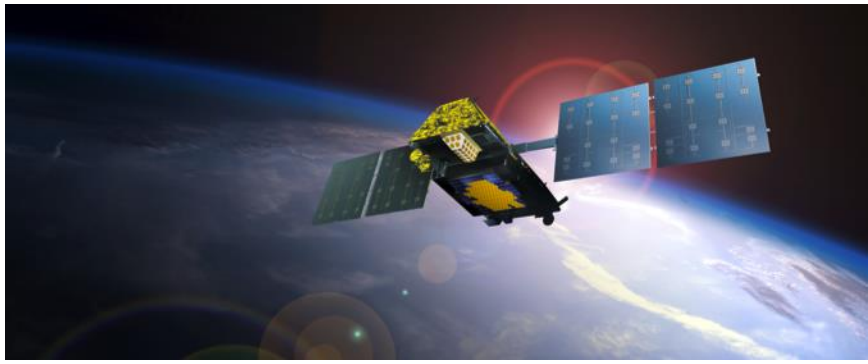
Iridium NEXT Positions PNT for the Future

Comprehensive ~$3 billion plan that supports success for many years

- Compatibility with existing network and devices
- Smooth network transition and customer continuity
- Retains unique LEO architecture with 66 new operational satellites, 9 in-orbit spares and 6 ground spares
- Deployment scheduled between 2016 and 2018 using SpaceX Falcon 9 rockets as primary launch vehicle
- Expanded capacity and higher data speeds

STL Differentiators





Originating from low-earth-orbit, the Satellite Time and Location (STL) service provides **powerful signal PNT capability** with **advanced security features.**

The world's **only** secure, high-powered, global solution for time and location

- STL is capable of providing service anywhere in the world (including the polar regions), today
- STL provides 3D Location
- STL requires no Federal funding for build out
- STL user equipment has comparable (size, weight and power) as GPS systems and is capable of integration into smart phones with no increased equipment cost

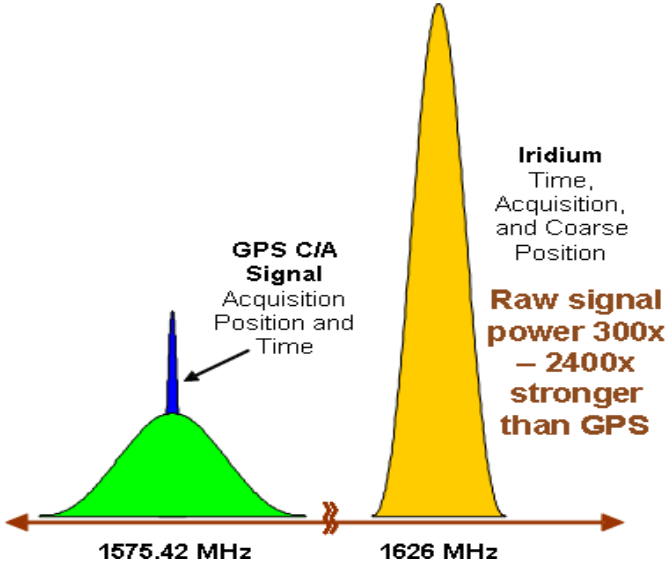
STL - Unique Value from Iridium Satellites

Worldwide Coverage

No local infrastructure

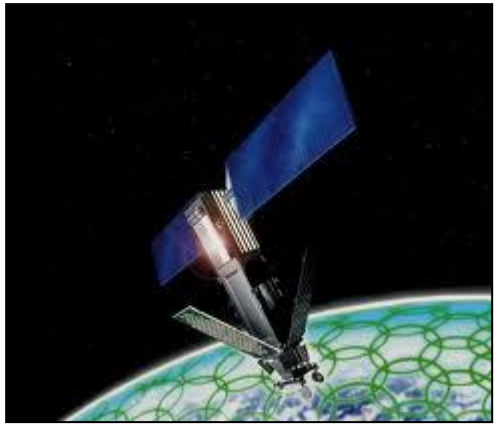
High Power Broadcasts

Signals penetrate buildings

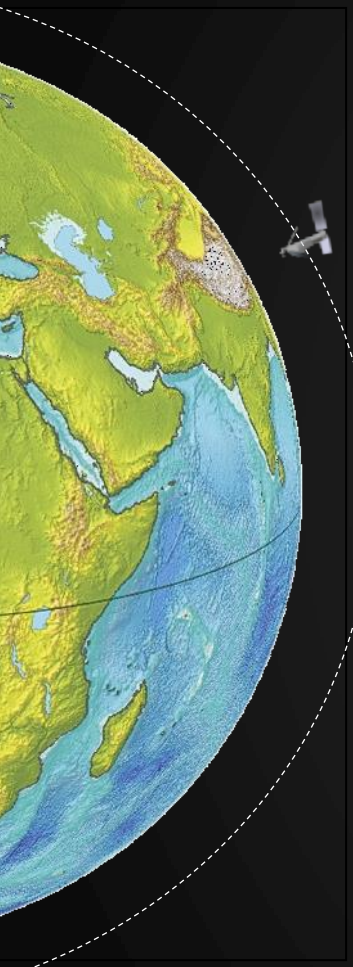


Localized Spot Beams

Enables proof of location



No other asset provides this key combination of features



STL

- 66 existing LEO satellites
- Global coverage
- 500 mile altitude
- 1000x stronger than GPS

GPS

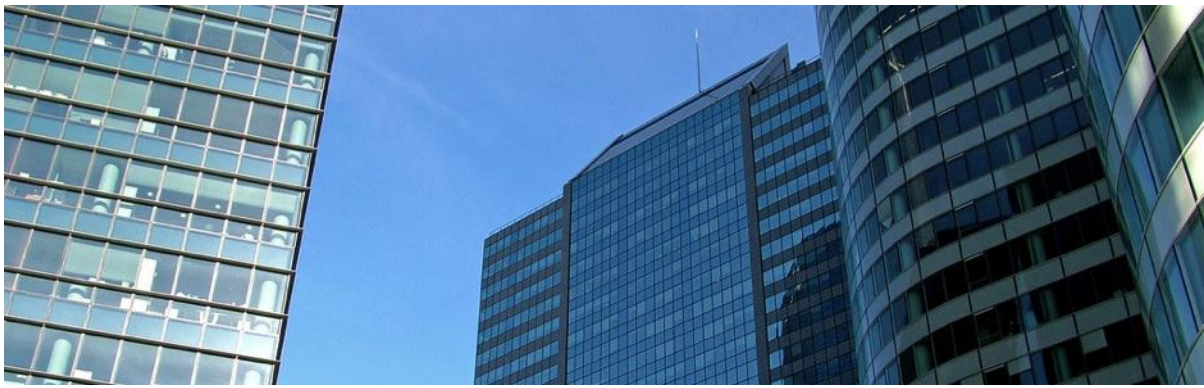
- 24 GPS satellites
- Global coverage
- 12,500 mile altitude
- 25x further away

STL Capabilities

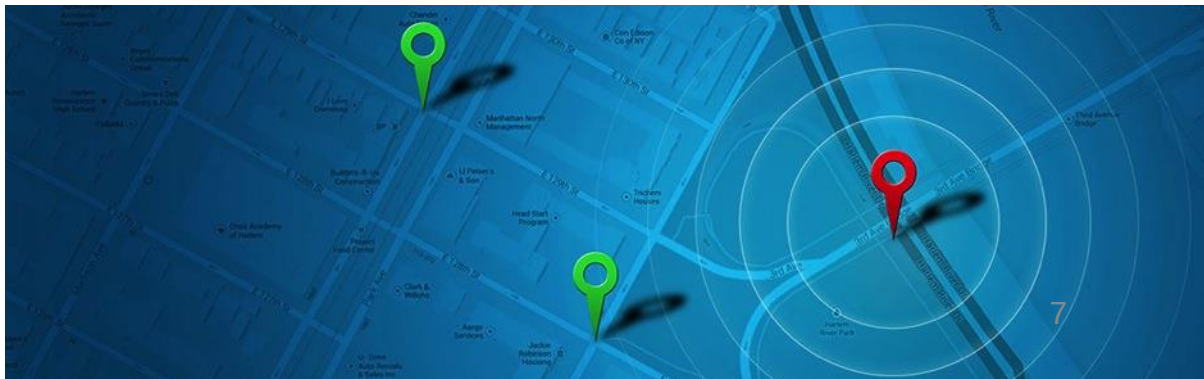
Time Synchronization
Independent of GPS

< 1uSec

Deep Indoor Penetration
With no local infrastructure

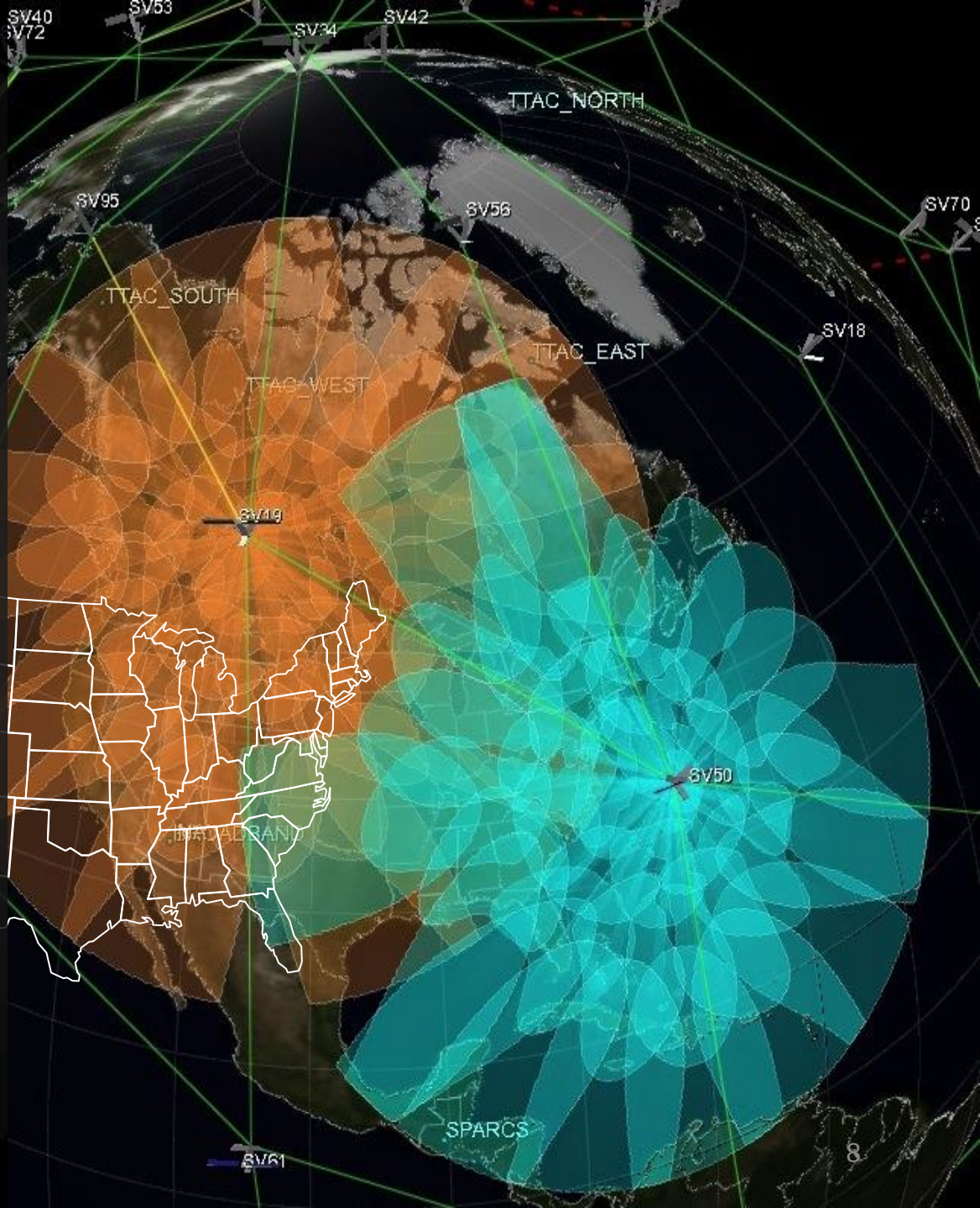


Trusted Location
20-50m

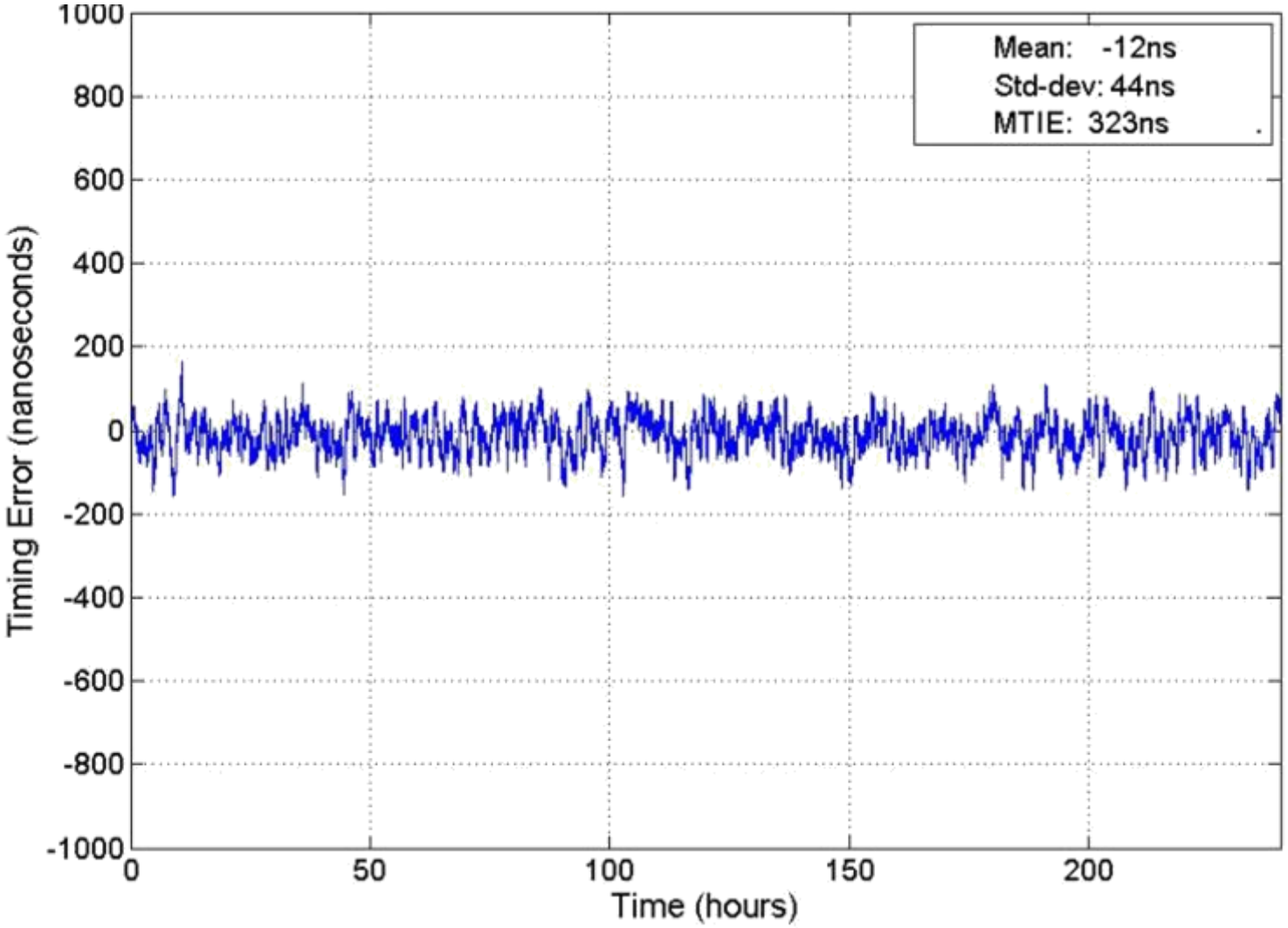


Spot Beams

Overlapping spot beams provide location-specific encryption codes that change every second for maximum security.



STL Timing Results



Satelles Concerns with Potential Interference

- Satelles STL service depends on Iridium operating free from harmful interference
- Iridium has filed detailed technical analysis with the FCC on potential spectrum encroachment from other radio services

Thank You

Artist depiction of an Iridium LEO satellite in space.